REMARKS

Applicants have received and carefully reviewed the Final Office Action of the Examiner mailed September 6, 2005. Claims 8 and 20 have been amended. Support for the amendments is found in the specification, claims, and drawings as originally filed. No new matter has been added. Claims 1-29 remain pending. Reconsideration and reexamination are respectfully requested.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 8 and 20 are rejected as being indefinite for reciting "small area." The claims have been amended to clarify the small area leaves a significant portion of the region free of circuits, as described in the specification at, for example, page 7, lines 17-22. Applicants submit that the claims, as amended, satisfy the requirements of 35 U.S.C. § 112, second paragraph. Withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. § 102(b)

Claims 1-19 and 23-29 are rejected as being anticipated by Gates (US 5,554,849). The Examiner asserts that Gates discloses the invention substantially as claimed. Applicants respectfully traverse the rejection. Independent claim 1 recites a sensor comprising a substrate, a pixel situated on a single level on the substrate, and an electronics circuit situated on the single level. Independent claim 11 recites a sensor having an array of pixels situated on a substrate, where each pixel is located on a single level with an associated electronic circuit. Independent claim 16 recites a sensing means including means for supporting on one level a means for sensing infrared light and a means for electronically processing signals. Independent claim 23 recites a sensor in which a pixel is situated in the same plane as an electronics circuit; independent claim 24 recites a thermal sensor in which each pixel in an array is located on the same surface as an electronic circuit; independent claims 25 and 26 recite thermal sensors in which electronics are situated horizontally proximate to each of an array of pixels; independent claim 27 recites a sensing means including means for supporting on one surface a means for

sensing infrared light and means for electronically processing signals; independent claim 28 recites a sensing means including a means for supporting the means for sensing infrared light and the means for elcctronically processing signals horizontally proximate to each other; claim 29 recites a sensing means including means for supporting in a plane, means for sensing infrared light and means for electronically processing signals.

Gates does not appear to teach such sensors or sensing means. In FIG. 4, Gates appears to teach an active layer 28 positioned over substrate 26. Gates specifically teach "pixel elements formed above a semiconductor readout substrate." (emphasis added) See column 2, lines 52-53. Gates thus does not appear to teach a sensor or sensing means as is recited in the claims. The Examiner asserts that Gates discloses electronic circuits located on a single level with the pixel. Applicants have carefully reviewed the Gates reference and have found no such teaching. If this rejection is maintained, the Examiner is respectfully requested to point out specifically where in Gates such teaching is found.

Further, Gates does not appear to provide any motivation, suggestion, or guidance for one of ordinary skill in the art to modify the sensor of Gates to achieve the claimed sensors and sensing means. Gates thus does not appear to teach or suggest each and every element of the independent claims or the claims dependent thereon.

Additionally, with respect to dependent claim 2, Gates does not appear to teach a sensor with a pixel having a fill factor greater than 69 percent. Gates appears to teach a two-dimensional array made up of multiple pixel diodes, where the entire array has "a large detector fill ratio of greater than approximately fifty percent." (emphasis added) See column 1, line 55 through column 2, linc 9. Gates does not appear to teach a pixel having a fill factor greater than 69 percent, as is recited in claim 2. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 1 and 11-13 are rejected as being anticipated by Wood et al. (US 5,449,910). The Examiner asserts that Wood et al. teach the invention substantially as claimed. Applicants respectfully traverse the rejection. Independent claim 1 recites a sensor comprising a substrate, a pixel situated on a single level on the substrate, and an electronics circuit situated on the single

level. Independent claim 11 recites a sensor having an array of pixels situated on a substrate, where each pixel is located on a single level with an associated electronic circuit. Wood et al. do not appear to teach such a sensor. Wood et al. teach multiple pixel areas 11, 12 in an array carried on a base 64, with electrical components and connections beneath heat sink layer 19 within a group of contiguous component layers 57 deposited on base 64. See column 3, lines 57-66. Wood et al. thus appear to teach a sensor in which a pixel is in a different layer from the electrical circuit. Additionally, there is no motivation for one of ordinary skill in the art to modify the sensor of Wood et al. to achieve the claimed invention. Reconsideration and withdrawal of the rejection is respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claims 20-22 are rejected as being unpatentable over Gates in view of Cole et al. (US 6,313,463). The Examiner acknowledges that Gates fails to disclose a microbolometer pixel comprising VOx, but asserts that it would have been obvious to one of ordinary skill in the art to modify the pixels of Gates by fabricating them out of VOx as suggested by Cole et al. since VOx is a common pixel fabrication material having a desirable thermal resistance and desirable optical, electrical, and thermal properties. Applicants respectfully traverse the rejection. As stated above, Gates does not appear to teach the basic elements of independent claim 16, from which claims 20-22 ultimately depend. Cole et al. do not appear to provide what Gates lacks. Thus, a combination of Gates and Cole et al. also fails to teach or suggest each and every element of the claims. Reconsideration and withdrawal of the rejection is respectfully requested.

In view of the foregoing, all pending claims are believed to be in condition for allowance. Reconsideration and reexamination are respectfully requested. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-677-9050.

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Respectfully submitted,

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